Sun on the perturbations in the motion of the Moon produced by the action of the planet.

In the preceding remarks I have confined myself to the former of these two portions, as it is the sole one which has been dealt with by M. Gogou, who, like Delaunay, has overlooked entirely the second more important portion. It is this second portion which forms the only real difficulty in the accurate calculation of the terms of this kind. It is the omission of this second portion by Delaunay which explains the discordance between him and Hansen with regard to the values of the long inequalities due to *Venus*, and it is the calculation of this second portion which seems to have so completely baffled Hansen in his attempt to deal with it in a numerical form.

But until this additional portion has been properly computed it cannot be said that the value of this term has been shown to be insensible, as believed by M. Gogou.

I had hoped to have ere this finished and published a complete determination of the real values, not only of this term, but also of both Hansen's terms of long period; but being unable out here in Natal to obtain a copy of Pontécoulant's *Théorie de la Lune*, a number of whose developments I have used in my subsidiary calculation, I am forced to delay this until I have recalculated nearly the whole of these developments—probably nearly a year's additional work.

Natal Observatory:
1885, *Feb.* 3.

Observations of Barnard's Comet (*b* 1884) *made at the Natal Observatory, Durban.* By Edmund Neison.

In the telegram sent to this Observatory on July 22, the North Polar Distance of this comet was erroneously given as 120° instead of 127°; so, though looked for most carefully, it was not discovered before the night of August 11. It was a faint, rounded, nebulous mass, with a central condensation. Sketches were made of the appearances of the comet on the nights of August 12 and 21, and September 13 and 16. The following notes were also recorded.

August 12.—Round hazy body with a hazy nucleus, and a faint tail-like extension.

August 16.—Very faint. Rounded preceding edge and faint tail. No distinct nucleus.

August 18.—Comet faint nebulous mass, without definite edges or nucleus. Slight evidence of tail on following side.

August 21.—Comet very faint. About 2′ in diameter. Two tiny points of light in the centre resembling 15-magnitude stars, which they probably were.

September 13.—Comet about 2′ in diameter, and decidedly condensed towards the centre.

September 16.—Comet seemed to glitter in the condensed centre as if there were one or two nuclei, or possibly very small stars, shining through the comet, as a number of faint stars were visible near. Diameter 2′·5; of condensed portion 0′·9. Slight trace of tail follows the condensed nucleus.

September 18.—Comet $3\frac{1}{2}'$ in diameter. Nearly round, and brighter than before. Decided nucleus.

Ten days' cloudy weather stopped further observation. On September 28 and 29 the comet was too near the Moon to be visible. Then cloudy weather intervened till November 4, when the comet was no longer visible.

The following observations were made with the parallel-wire micrometer of the 8-inch Equatorial of the Natal Observatory. The apparent centre of the condensed portion of the comet was observed. Owing to the very limited range of the micrometer, which is better suited for double star than for cometary work, some difficulty was found in finding comparison stars. The observations need no correction for refraction.

Apparent Places of Barnard's Comet.

Date. 1884.	Durban Mean Time.	App. R.A. 1884.	Log. Par. Factor.	App. Decl. 1884.	Log. Par. Factor.	Comp. Star.
	h m s	h m s		° ′ ″		
Aug. 12	10 30 8	17 1 49·90	8·6989	−36 43 52·3	8·3347	*a* & *b*
16	11 28 15	17 17 8·61	8·7873	−36 20 41·1	9·1123	*c*
18	11 10 52	17 24 44·21	8·7646	−36 7 39·4	8·9999	*d*
20	9 48 8	17 32 25·06	8·5957	−35 52 17·5	8·3641*n*	*e*
21	10 47 0	17 36 35·84	8·7257	−35 43 30·8	8·8109	*e*
Sept. 13	10 5 59	19 11 48·30	8·6044	−30 27 14·8	8·8736	*f*
16	10 13 34	19 23 52·18	8·6314	−29 18 20·8	9·0280	*g*
16	10 25 35	19 23 55·14	8·6316	−29 18 17·3	9·0274	*h*
18	9 44 42	19 31 39·46	8·5362	−28 38 5·8	8·8989	*i*

Comparison Stars.

No.	Name.	Authority for Adopted Place.	Adopted R.A.	Mean Decl. (1884)	Reduction to Apparent Place.	
			h m s	° ′ ″	s	″
a	Lacaille 7123	Cape Cat. 80 (Stone)	16 58 30·00	−37 3 58·1	+3·80	+1·2
b	Lacaille 7113	„ „	16 57 54·70	−36 34 41·5	+3·80	+0·8
c	✶ Anon.	Cape Tr.Cir.Obs.1884	17 16 53·80	−36 20 56·9	+3·88	+0·7
d	✶ Anon.	„ „	17 24 19·28	−36 4 18·8	+3·83	+1·6
e	✶ Anon.	„ „	17 34 30·33	−35 44 24·9	+3·83	+2·6
f	✶ Anon.	Gould's Zone Obs.	19 10 19·82	−30 33 43·1	+3·62	+11·4
g	✶ Anon.	„	19 23 48·61	−29 18 33·3	+3·57	+12·5
h	✶ Anon.	„	19 23 50·59	−29 10 13·8	+3·57	+12·5
i	Lacaille 8175	Cape Cat. 80 (Stone)	19 31 41·78	−28 52 4·7	+3·55	+13·2

Each place of the comet is founded on ten comparisons in Right Ascension and ten in North Polar Distance.

Natal Observatory:
1885, *Feb.* 3.

Spectroscopic Results for the Motions of Stars in the Line of Sight obtained at the Royal Observatory, Greenwich, in the year 1884. No. VIII.

(*Communicated by the Astronomer Royal.*)

The results here given are in continuation of those printed in the *Monthly Notices*, vol. xxxvi. p. 318, vol. xxxvii. p. 22, vol. xxxviii. p. 493, vol. xli. p. 109, vol. xlii. p. 230, vol. xliii. p. 81, and vol. xliv. p. 89. The observations were made with the "half-prism" spectroscope, one "half-prism" with a dispersion of about $18\frac{1}{2}°$ from A to H being used, except in a few cases of bright stars, mentioned in the Remarks, where a train of two "half-prisms" with a dispersion of 80° from A to H was used. An eyepiece with a magnifying power of 14 was employed throughout.

The cylindrical lens has always been used in front of the slit as in the observations made previously to 1881. A slip of metal coated with Balmain's luminous paint inserted immediately behind the measuring pointer has been frequently employed to give a phosphorescent illumination of the field.

The observations of the Moon and of the sky spectrum have been made as a check on the general accuracy of the results.

The bright Hβ line in the spectrum of γ *Cassiopeiæ* was much fainter in 1884 than when observed in 1880, 1881, and 1883. It seemed also fainter for the observations made in September than for those made in August.

Motions of Stars in the Line of Sight, in Miles per Second, observed with the Half-prism Spectroscope.

(+ denotes Recession; − Approach.)

The initials M and N are those of Mr. Maunder and Mr. Nash respectively.

Date. 1884.	No. Obs.	of Line Meas.		Earth's Motion in M per sec.	Concluded Motion of Star. Meas.	Estimd.	Remarks.
				α Andromedæ.			
Aug. 7	M	2	F	−13·5	+ 4·2	− 1·4	Definition fair.
11	M	3	F	−12·9	−13·5	− 9·2	Star-line fairly well defined.
12	N	2	F	−12·7	−30·9	−34·9	Star-line faint.
25	M	2	F	−10·3	−21·6	−18·0	Definition fair.
Sept. 4	M	2	F	− 8·1	−29·9	−27·1	Definition fair.
10	M	2	F	+ 6·6	−22·1	−19·2	Definition fair.